

# TESTIMONY OF W. R. STIMART FOR

DUKE POWER COMPANY
PSCSC DOCKET NO. 97-005-E



- 1 Q. PLEASE STATE YOUR NAME, ADDRESS AND POSITION WITH DUKE POWER
- 2 COMPANY.
- 3 A. My name is William R. Stimart and my business address is 422 South Church
- 4 Street, Charlotte, North Carolina. I am Vice President, Rates and Regulatory Affairs
- 5 of Duke Power Company.
- 6 Q. STATE BRIEFLY YOUR EDUCATION, ACCOUNTING BACKGROUND AND
- 7 PROFESSIONAL AFFILIATIONS.
- 8 A. I am a graduate of the University of Illinois, holding a degree of Bachelor of Science
- 9 in Accounting. I am a Certified Public Accountant with membership in the American
- 10 Institute of CPAs and the North Carolina Association of CPAs. I am also a member
- of the Southern Carolinas Chapter of the Financial Executives Institute (FEI) and a
- member of the FEI Committee on Corporate Reporting. I am a member of the
- Accounting Standards Committee of the Edison Electric Institute.
- 14 Q. PLEASE DESCRIBE YOUR BUSINESS BACKGROUND AND EXPERIENCE.
- 15 A. Upon graduation from college in 1953, I joined Arthur Andersen & Co., an
- international firm of Certified Public Accountants. During the following eleven years I,
- worked almost exclusively with public utilities in the areas of audit, accounting,
- finance and regulatory matters. From 1964 to the spring of 1971, I was associated
- with Ayrshire Collieries Corporation in varying positions, the last of which was
- 20 Controller. I joined Duke Power in May 1971 as Assistant Treasurer, was elected

RETURN DATE:
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1		Treasurer in April 1972, Controller in October 1976 and Vice President, Regulatory
2		Affairs in October 1979. I became Vice President, Rates and Regulatory Affairs in
3		August 1990.
4	Q.	ARE YOU FAMILIAR WITH THE ACCOUNTING PROCEDURES AND BOOKS OF
5		ACCOUNT OF DUKE POWER COMPANY?
6	A.	Yes. As ordered by this Commission, the books of account of Duke Power
7		Company follow the uniform classification of accounts prescribed by the Federal
8		Regulatory Commission.
9	Q.	MR. STIMART, HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS
10		COMMISSION?
11	A.	Yes. I have testified on financial and accounting matters in all of the Company's
12		general rate cases since 1973. I have also testified in connection with numerous
13		applications by the Company to adjust its electric rates and charges based solely on
14		changes in the cost of fuel.
15	Q.	WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?
16	A.	The purpose of my testimony is as follows:
17		To summarize the Company's procedures in accounting for fuel.
18		2. To update the actual fuel cost data reviewed in these proceedings. Actual
19		fuel costs through March 1996 were presented in the last hearing. April
20		1996 through March 1997 actual fuel cost data is presented in Stimart
21		Exhibits 1 and 5 accompanying my testimony.
22		3. To summarize the performance of the Company's nuclear generating
23		system during the period March 1996 through February 1997.

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To discuss the fuel recovery results for the period April 1996 through May

- To provide and explain the Company's computations for the projected fuel costs for the twelve-month period June 1997 through May 1998.
- Q. WOULD YOU EXPLAIN THE RELATIONSHIPS BETWEEN THE TIME PERIODS
   INDICATED IN YOUR LAST ANSWER?
- 5 The purpose of this hearing is to set the fuel factor for bills rendered during the Α. 6 twelve-month period June 1997 through May 1998 and review the actual fuel costs 7 incurred during the twelve-month period April 1996 through March 1997. The 8 current fuel factor was set in May 1996 for the period June through November 1996. 9 The South Carolina General Assembly passed during the 1996 legislative year Act 10 No. 348, Statutes at Large (1996) which modified the prior review period for the fuel 11 clause from six (6) months to twelve (12) months. Consequently, the Commission 12 issued Order No. 96-556 on August 14, 1996, and stated that Duke's current fuel 13 factor which was established for the period June 1996 through November 1996, pursuant to Order No. 96-367 should remain in effect until such time as the 14 Commission issues a further Order under the new statute. My testimony and 15 16 exhibits support the fuel factor which will be in effect from June 1997 through May 17 1998. Projected fuel cost information for April and May 1996 was presented in the 18 Company's last fuel proceeding. Actual information for the period April 1996 19 through March 1997 is now available and is set forth on Stimart Exhibits 1 and 5.
- Q. MR. STIMART, CAN YOU EXPLAIN HOW THE MONTHLY COAL COSTS
  CHARGED TO EXPENSE ARE DERIVED?
- All the Company's coal is delivered by rail. As that coal is received by each plant, it is weighed and sampled for quality verifications. Subsequently, the purchasing department compares the weight, price and quality with the purchase order and railroad waybill. Adjustments are made to the cost of coal purchased in those cases

where the quality of the coal received varies from contract specifications for BTU (British Thermal Unit) and ash content.

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Moisture and BTU tests are also made as the coal is delivered to the coal bunkers for each boiler. BTU tests measure the energy content of the coal. To the extent that the moisture content of the coal burned differs from the moisture content of coal purchased, an adjustment is subsequently made to the inventory tonnage. Wet coal weighs heavy and without the moisture adjustment, tons burned would be overstated and inventory would be understated.

Coal costs charged to expense are calculated on an individual plant basis. The expense charge is the product of the tons of coal conveyed to the bunkers for a generating unit during the month times the average cost of the coal. The number of tons is determined by using scales located on the conveyor belt running to the unit's coal bunkers. The average cost reflects the total cost of coal on hand as of the beginning of the month, computed using the moving average inventory method, plus the cost of coal delivered to the plant during the month. The cost of coal is determined from the invoice for the coal and the freight bill and does not include any nonfuel cost or coal handling cost at the generating station.

Physical inventories using aerial surveys are conducted annually. No adjustments to book inventory have been made since January 1994.

- PLEASE DISCUSS THE PERFORMANCE OF DUKE POWER COMPANY'S FOSSIL GENERATING SYSTEM.
- In 1996 the fossil steam generating plants provided 46% of total generation. The heat rate for the fossil coal system was 9443 BTU, a slight decrease from the previous year. A low heat rate indicates that the generating system is using less heat energy from fuel to generate electrical energy.

- 1 Q. PLEASE EXPLAIN HOW MONTHLY NUCLEAR COSTS CHARGED TO 2 EXPENSE ARE DERIVED.
- A. Nuclear fuel expense for the month is based on the energy output in Mbtus of each fuel assembly in the core, nuclear fuel disposal costs and the DOE Decontamination and Decommissioning Fund Fee.

The cost of each fuel assembly is determined when the fuel is loaded in the reactor. The costs include yellowcake (uranium), conversion, enrichment and fabrication. An estimate of the energy content of each fuel assembly is also made. A cost per Mbtu is determined by dividing the cost of the assembly by its expected energy output. Each month an engineering calculation of the Mbtu output of an assembly is priced at its cost per Mbtu.

During the life of a fuel assembly, the expected energy output may change as a result of actual plant operations. When this occurs, changes are made in the cost per Mbtu for the remaining energy output of the assembly. New fuel assembly orders are planned for either a sixteen or eighteen month cycle. The length of a cycle is the duration of time between when a unit starts up after refueling and when it starts up after its next refueling. During a refueling approximately one-third of the fuel in the reactor is replaced.

- Q. WERE STIMART EXHIBITS 1 THROUGH 6 PREPARED BY YOU OR AT YOUR
   DIRECTION AND UNDER YOUR SUPERVISION?
- 21 A. Yes. Each of these exhibits was prepared at my direction and under my supervision.

- 1 Q. MR. STIMART, WHAT IS THE MAGNITUDE OF THE COMPANY'S MONTHLY
  2 FUEL COSTS?
- A. Stimart Exhibit 1 sets forth the total system actual fuel costs (as burned) that the

  Company incurred from April 1996 through March 1997. This exhibit also shows

  fuel costs by type of generation and total MWH generated during this period. The

  oil and gas usage was for light-off fuel used to start up our coal plants and for

  combustion turbine generation. The monthly fluctuations in total fuel cost during this

  period are primarily due to refueling and other outages at the nuclear stations,

  weather sensitive sales and the availability of hydro generation.
- 10 Q. MR. STIMART, WHAT IS THE MAGNITUDE OF THE COMPANY'S FUEL COST
  11 COMPARED TO THE TOTAL COST OF SERVICE?
- 12 A. Fuel costs continue to be the largest cost item incurred in providing electric service.
- For the twelve months ended February 1997, fuel and the fuel component of
- purchased power represented approximately 18% of the Company's total revenue.
- 15 Coal costs are the largest fuel cost component and during the period April 1996
- through March 1997 comprised approximately 72% of the Company's fuel bill.
- 17 Q. MR. STIMART, WHAT HAS HAPPENED TO THE UNIT COST OF FUEL DURING
  18 RECENT REPORTING PERIODS?
- A. Stimart Exhibits 2A and 2B graphically portray the "as burned" cost of both coal and nuclear fuel in cents per million BTU (MBTU) for the twelve month periods ending
  January 1995 through March 1997. As Exhibit 2A shows, coal costs have trended downward somewhat during this period. The trend of coal prices reflects price reductions resulting from contract re-negotiations as well as an increase in purchases in the spot market as our total needs increased with growth. Exhibit 2B shows that nuclear fuel costs have also trended down slightly.

1		While the unit costs of each type of fuel have shown little volatility in the
2		recent past, we can expect our composite cost of fuel to increase. Our future KWH
3		growth will be met primarily from the Company's coal generating units and the cost
4		of coal is about three times the cost of nuclear fuel.
5	Q.	MR. STIMART, WHAT DOES STIMART EXHIBIT 3 SHOW?
6	A.	Stimart Exhibit 3 graphically shows generation by type for the current and projected
7		test periods as well as three prior periods.
8	Q.	MR. STIMART, WOULD YOU PLEASE DISCUSS THE PERFORMANCE OF THE
9		COMPANY'S NUCLEAR GENERATING SYSTEM DURING THE PERIOD MARCH
10		1996 THROUGH FEBRUARY 1997?
11	A.	Stimart Exhibit 4 sets forth the achieved nuclear capacity factor for the period March
12		1996 through February 1997 based on the criteria set forth in Section 58-27-865,
13		Code of Laws of South Carolina as amended in 1996. The statute states as follows:
14 15 16 17 18 19 20		There shall be a rebuttable presumption that an electrical utility made every reasonable effort to minimize cost associated with the operation of its nuclear generation facility or system, as applicable, if the utility achieved a net capacity factor of ninety-two and one-half percent or higher during the period under review. The calculation of the net capacity factor shall exclude reasonable outage time
21		As shown on page 1 of Stimart Exhibit 4, the Company's achieved capacity
22		factor reflecting reasonable outage time (as set forth in § 58-27-865) was greater
23		than 92.5% for the current period.
24		With the refueling requirements, maintenance requirements, Nuclear
25		Regulatory Commission (NRC) operating requirements, and the complexity of
26		operating nuclear generating units our system will nearly always have the equivalent
27		of at least one nuclear unit out of service. Pages 2 and 3 of Stimart Exhibit 4 show

the dates of and explanations for actual and forecast outages of a week or more in duration.

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There were two significant outages during the current period. The first was the outage at Catawba Unit 1 to refuel and replace the four steam generators. The second significant event, an equipment failure, was the steam pipe rupture at Oconee Unit 2 in September 1996. This equipment failure on the non-nuclear secondary side of the plant resulted from a water hammer occurrence while returning the plant to full operation. To ensure employee safety, the plant was shut down for an extended period of time to make numerous plant modifications for construction code compliance to minimize future potential human injury from pipe rupture due to water hammers. While water hammers will occur in most power plants, only a small fraction create any damage, which generally is to the pipe hangers, not the pipe itself. This event is the only water hammer in a generating plant of which we are aware where the pipe catastrophically failed.

Following the shutdown of Unit 2, Unit 3 was brought off-line for refueling and an extensive review of and plant modifications to secondary side piping and pipe hangers, including moisture separator reheater drain lines and associated piping, to minimize future potential human injury from pipe ruptures. Unit 1 was also brought down for a comparable review and necessary plant modifications.

- MR. STIMART, DO YOU BELIEVE THE COMPANY'S ACTUAL FUEL COSTS INCURRED DURING THE PERIOD APRIL 1996 THROUGH MARCH 1997 WERE REASONABLE?
- 23 A. Yes. I believe the costs are reasonable and meet the guideline test set forth in 24 Section 58-27-865(F) of the Code of Laws of South Carolina. They also reflect the 25 Company's continuing efforts to maintain reliable service and an economical

- generation mix, thereby minimizing the total cost of providing service to our South
- 2 Carolina retail customers.
- 3 Q. WHAT FUEL FACTORS HAS THIS COMMISSION APPROVED IN THE PAST?
- 4 A. The following table shows the approved factors since 1979, when the current fuel
- 5 clause procedure began:

6	Period	<u>Periods</u>	<u>¢/KWH</u>
7	June 1979 - May 1980	2	1.3500
8	June 1980 - May 1981	2	1.2250
9	June 1981 - November 1981	-1	1.5000
10	December 1981 - May 1982	1	1.5750
11	June 1982 - November 1982	1	1.6500
12	December 1982 - May 1983	1	1.6000
13	June 1983 - May 1984	2	1.3750
14	March 1984		1.0500
15	June 1984 - November 1984	1	1.1250
16	December 1984 - November 1985	2	1.2500
17	October 1985		1.1199
18	December 1985 - November 1986	2	1.1199
19	November 1986		0.9806
20	December 1986 - May 1987	1	0.9806
21	June 1987 - November 1987	1	1.1500
22	December 1987 - November 1988	2	1.2500
23	December 1988 - November 1989	2	1.0750
24	December 1989 - May 1990	1	1.0500
25	June 1990 - November 1990	1	1.0000
26	December 1990 - November 1991	2	1.1000
27	December 1991 - May 1992	1	1.0000
28	June 1992 - November 1993	3	0.9500
29	December 1993 - May 1997	7	1.0000

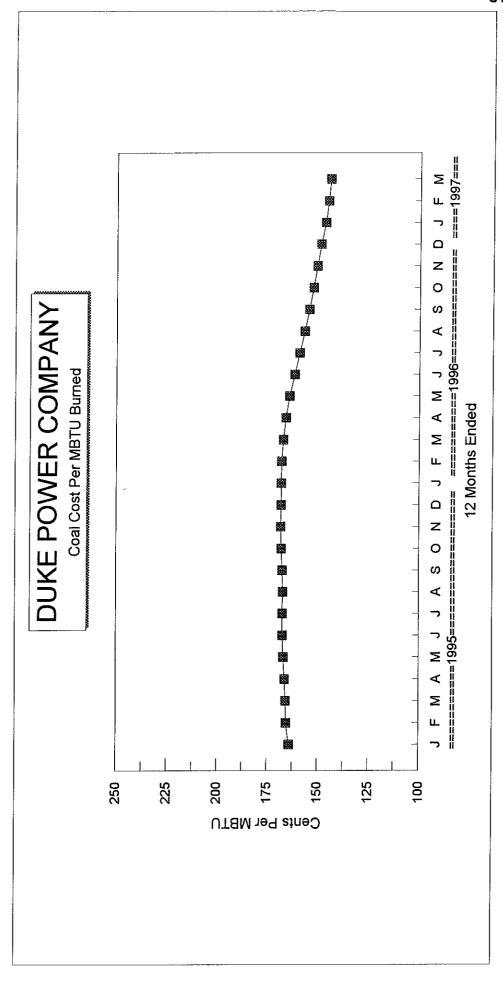
- 30 Q. WHAT HAS BEEN THE COMPANY'S FUEL RECOVERY EXPERIENCE DURING
- THE PERIOD APRIL 1996 THROUGH MARCH 1997?
- A. Stimart Exhibit 5 shows the actual fuel costs incurred for the period April 1996 through March 1997, the estimated fuel costs for April and May 1997 and the over-recovery carried forward at the beginning of the period. This exhibit compares the fuel costs incurred with the fuel rate being collected. The Company started the period under-recovered by \$213,000 as shown on line 11, and as shown on line 12,

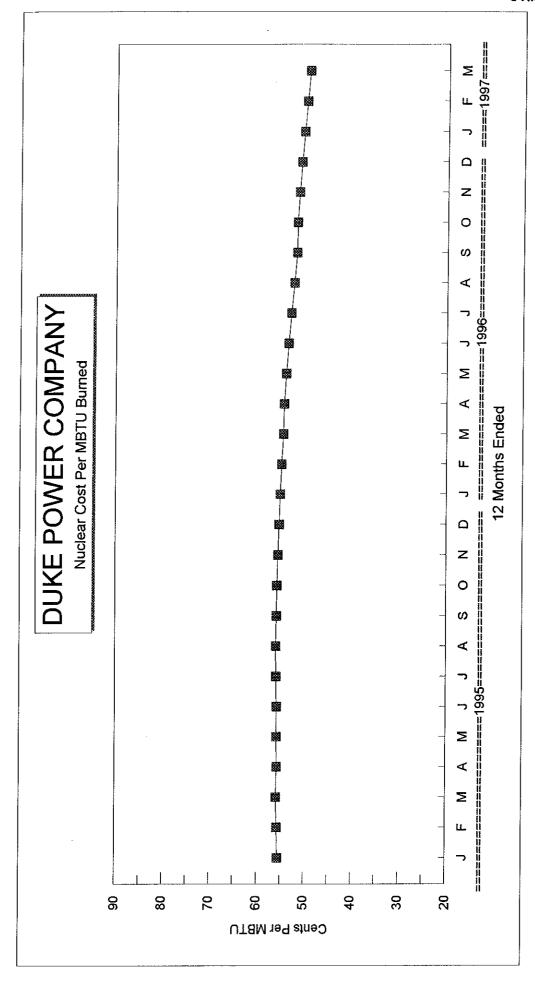
- the Company is projecting an under-recovery at the end of the period of \$13,320,000.
- Q. MR. STIMART, WHAT IS THE COST OF FUEL THE COMPANY PROJECTS FOR
   RECOVERY DURING THE PERIOD JUNE 1997 THROUGH MAY 1998?
- 5 A. Stimart Exhibit 6 sets forth projected fuel costs for the period June 1997 through
  6 May 1998. As shown on line 12, the fuel cost estimated for recovery during this
  7 period is 1.0165¢/KWH.
- 8 Q. WHAT WAS THE BASIS FOR ESTIMATING FUEL COSTS AS SHOWN ON9 STIMART EXHIBIT 6?
- 10 A. The latest available information was used to develop the projections shown on 11 Stimart Exhibit 6. The projected KWH sales on line 6 are from the Company's 1996 12 sales forecast. Projected nuclear generation reflects planned refueling and steam 13 generator replacement outages and a 95% capacity factor while the units are 14 The most recent nuclear fuel cost estimate was used to determine 15 projected nuclear fuel expense. Estimated hydro generation for the period is based 16 on median generation for the period 1966 - 1996. The median hydro generation for 17 each calendar month is determined by selecting the value of generation for that 18 calendar month that is greater than the generation values for that calendar month 19 during 15 years of a 31 year (1966 - 1996) period and less than the generation 20 values for that calendar month during 15 years of the same 31 year period.
- Q. MR. STIMART, WHAT FUEL FACTOR IS THE COMPANY PROPOSING FOR
  INCLUSION IN BASE RATES EFFECTIVE JUNE 1, 1997?
- A. The Company proposes that a fuel factor of 1.000¢/KWH continue to be reflected in base rates for the period June 1, 1997 through May 30, 1998. Based on our estimate, this fuel factor would allow the Company to recover most of its fuel costs

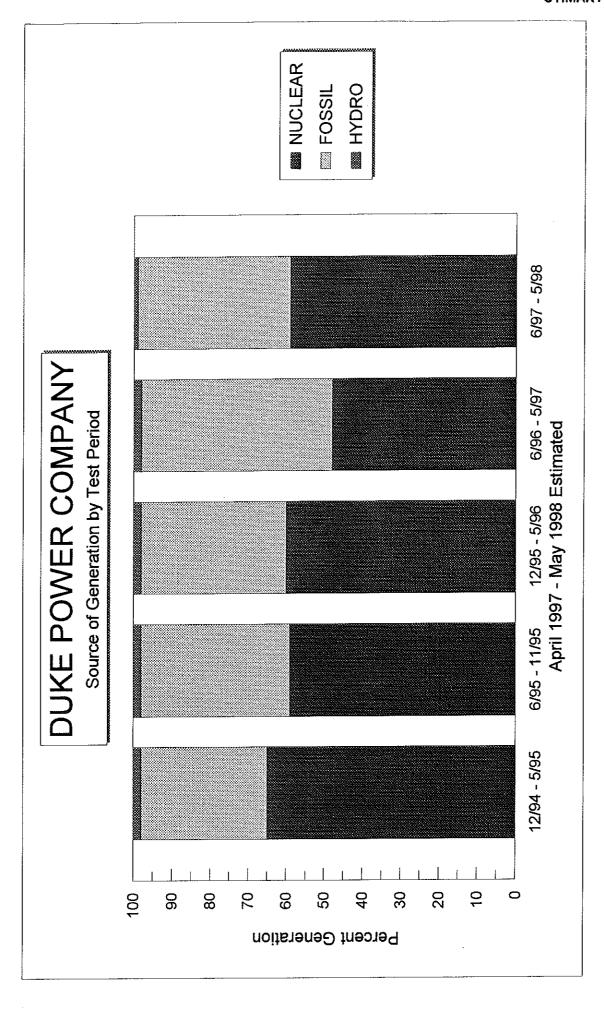
- incurred during the period June 1997 through May 1998, resulting in a slight under-1 recovery at the end of the period. This factor balances out over/under-recoveries of 2 fuel costs over time and is in keeping with the spirit of the statute which allows 3 utilities to recover prudently incurred fuel costs "in a manner that tends to ensure 4 public confidence and minimize abrupt changes in charges to consumers." 5
- MR. STIMART, DOES THAT CONCLUDE YOUR TESTIMONY? 6 Q.
- 7 A. Yes, it does.

DUKE POWER COMPANY SOUTH CAROLINA FUEL CLAUSE 1997 ANNUAL FUEL HEARING TOTAL COMPANY FUEL COST \$000

arch 1997 \$38,832	457	6	11,205	\$50,513	5,328,523
Feb. 1997 March 1997 \$40,705 \$38,832	407	42	10,492	\$51,646	5,310,740
Jan. 1997 \$58,708	798	<del>-</del>	9,210	\$68,717	6,456,773 5,595,607 5,272,979 5,498,510 6,325,822 5,310,740 5,328,523
)ec. 1996 \$50,023	1,694	ĸ	9,047	\$60,769	5,498,510
Nov. 1996 \$55,797	277	10	6,440	\$62,824	5,272,979
Oct. 1996 \$49,223	359	221	11,594	\$61,397	5,595,607
Sept. 1996 \$41,872	289	47	16,201	\$58,409	6,456,773
<u>Aug. 1996</u> <u>Sept. 1996</u> \$57,910    \$41,872	191	602	18,172	\$76,875	7,729,085
July 1996 \$59,953	231	1,278	17,603	\$79,065	7,721,214
966,	348	1,675	13,755	\$71,777	6,776,434
April 1996 May 1996 June '	370	793	14,590	\$60,239	6,066,778 4,956,960 6,091,715 6,776,
<u>April 1996</u> \$36,895	566	58	12,421	\$49,940	4,956,960
Mo. Avg. 12Mo. 3/96 \$42,937	898	393	18,283	\$62,511	
<u>Description</u> Coal	io	Gas	Nuclear	Total	MWH Generation
No.	2 Oi	ო	4	ß	ဖ







# STIMART EXHIBIT 4 Page 1 of 3

### DUKE POWER COMPANY SOUTH CAROLINA FUEL CLAUSE 1997 ANNUAL FUEL HEARING NUCLEAR PLANT PERFORMANCE CAPACITY FACTOR 3/96 - 2/97

1	Nuclear System Actual Net Generation During Test Period	44,710,851 MWH
2	Total Number of Hours During Test Period	8,760
3	Nuclear System MDC During Test Period	7,054 <b>MW</b>
4	Reasonable Nuclear System Reductions	17,374,264 MWH
5	Nuclear System Capacity Factor [1/((2 * 3) - 4)] * 100	<u>100.66</u> %

#### DUKE POWER COMPANY SOUTH CAROLINA FUEL CLAUSE 1997 ANNUAL FUEL HEARING NUCLEAR PLANT PERFORMANCE

# Nuclear Outages Lasting One Week Or More - Current Period

<u>Unit</u>	Date of Outage	Explanation of Outage
Oconee 1	10/4/96 - 2/12/97	Evaluate, inspect & modify moisture separator reheater drain line & associated piping
Oconee 2	3/28/96 - 5/7/96	Refueling - EOC 15
	9/24/96 - 2/3/97	Second stage reheater drain line rupture
Oconee 3	10/4/96 - 11/17/96	Refueling - EOC 16
	11/17/96 - 2/28/97	Evaluate, inspect & modify moisture separator reheater drain line & associated piping
McGuire 1	10/31/96 - 11/10/96	Vital battery inoperable due to failed discharge test
	2/14/97 - 2/28/97	Refueling - EOC 11
McGuire 2	4/5/96 - 5/14/96	Refueling - EOC 10
	5/22/96 - 6/29/96	2B reactor coolant pump tripped
	10/31/96 - 11/12/96	Vital battery inoperable due to failed discharge test
Catawba 1	6/12/96 - 10/4/96	Refueling - EOC 9, Steam Generator Replacement
Catawba 2	8/3/96 - 8/12/96	Control room ventilation inoperable
	12/14/96 - 12/22/96	Residual heat removal pump operability concerns due to leakage on unseated check valve

#### DUKE POWER COMPANY SOUTH CAROLINA FUEL CLAUSE 1997 ANNUAL FUEL HEARING NUCLEAR PLANT PERFORMANCE

# Nuclear Outages Lasting One Week Or More - Forecast Period

<u>Unit</u>	Date of Outage	Explanation of Outage
Oconee 1	8/9/97 - 9/28/97	Refueling - EOC 17
Oconee 2	2/1/98 - 3/13/98	Refueling - EOC 16
McGuire 1	2/14/97 - 5/25/97	Steam Generator replacement & refueling - EOC 11
McGuire 2	9/25/97 - 1/3/98	Steam Generator replacement & refueling - EOC 11
Catawba 1	11/29/97 - 1/13/98	Refueling - EOC 10
Catawba 2	3/22/97 - 5/1/97	Refueling - EOC 8

DUKE POWER COMPANY SOUTH CAROLINA FUEL CLAUSE 1997 ANNUAL FUEL HEARING CURRENT PERIOD FUEL COSTS INCURRED \$000

1.0165

DUKE POWER COMPANY SOUTH CAROLINA FUEL CLAUSE 1997 ANNUAL FUEL HEARING PROJECTED FUEL COST 6/97 - 5/98

Line														
<u>8</u> −	. <u>Item</u> Fossil Fuel	June 1997 July 1997 Aug. 1997 \$43,145 \$48,304 \$53,871	July 1997 \$48,304		Sept. 1997 \$45,734	Oct. 1997 \$42,370	Nov. 1997 Dec. 1997 Jan. 1998 Eeb. 1998 March 1998 April 1998 May 1998 \$42,266 \$57,505 \$45,907 \$44,191 \$34,338 \$28,145 \$31,997	Dec. 1997 \$57,505	Jan_1998 \$45,907	Eeb. 1998 1 \$44,191	March 1998 \$34,338	April 1998 \$28,145	May 1998 \$31,997	Total \$517,773
2	Nuclear Fuel	15,542	16,065	14,251	12,626	11,986	11,582	11,546	14,982	11,825	14,460	15,002	15,391	165,258
ო	Fuel In Purchases	5,421	5,472	5,472	5,421	5,472	5,397	4,711	4,965	5,100	5,229	5,186	5,229	63,075
4	Fuel In Intersystem Sales	3.111	3,111	3,111	3,111	3,111	3,111	3,111	3,111	3,111	3,111	3,111	3,111	37,332
ß	Total Fuel Costs	\$60,997	\$66,730	\$70,483	\$60,670	\$56,717	\$56,134	\$70,651	\$62,743	\$58,005	\$50,916	\$45,222	\$49,506	\$708,774
ဖ	Total MWH Sales	6,348,227	6,862,808	6,938,930	6,372,605	5,892,880	5,892,880 5,656,395 6,522,576 6,342,454 6,074,806	6,522,576	6,342,454	6,074,806	5,919,331	5,555,216	5,664,866	74,151,094
7	Fuel Costs Incurred ¢/kwh	0.9609	0.9723	1.0158	0.9520	0.9625	0.9924	1.0832	0.9893	0.9548	0.8602	0.8140	0.8739	0.9559
ω	SC Retail MWH Sales	1,910,320	1,910,320 1,939,626	2,031,309	1,924,493	1,830,021	1,830,021 1,707,692 1,758,970 1,766,324 1,804,454 1,813,472 1,734,306	1,758,970	1,766,324	1,804,454	1,813,472	1,734,306	1,770,662	21,991,649
თ	SC Fuel Costs	\$18,356	\$18,859	\$20,634	\$18,321	\$17,614	\$16,947	\$19,053	\$17,474	\$17,229	\$15,599	\$14,117	\$15,474	\$210,218
9	10 (Over)/Under On Ex. 5													13,320
<del>-</del>	11 Adjusted SC Fuel Costs													\$223,538
12	12 SC Fuel Cost ¢//kwh													1 0165